

WHAT IS CLAIMED IS:

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1. In an Automatic Speech Recognition (ASR) system having at least two language models, a method for combining language model scores generated by at least two language models, said method comprising the steps of:

generating a list of most likely words for a current word in a word sequence uttered by a speaker, and acoustic scores corresponding to the most likely words;

10 computing language model scores for each of the most likely words in the list, for each of the at least two language models;

15 respectively and dynamically determining a set of coefficients to be used to combine the language model scores of each of the most likely words in the list, based on a context of the current word; and

20 respectively combining the language model scores of each of the most likely words in the list to obtain a composite score for each of the most likely words in the list, using the set of coefficients determined therefor.

2. The method according to claim 1, wherein said determining step comprises the steps of:

dividing text data for training a plurality of sets of coefficients into partitions, depending on words counts corresponding to each of the at least two language models; and

for each of the most likely words in the list, dynamically selecting the set of coefficients from among the plurality of sets of coefficients so as to maximize the likelihood of the text data with respect to the at least two language models.

3. The method according to claim 2, wherein the at least two language models comprise a first and a second language model, and said dividing step comprises the step of grouping, in a same partition, word triplets  $w_1w_2w_3$  which have a count for the word pair  $w_1w_2$  in the first language model greater than the count for the word pair  $w_1w_2$  in the second language model.

4. The method according to claim 2, wherein said selecting step comprises the step of applying the Baum Welch

iterative algorithm to the plurality of sets of coefficients.

5 5. The method according to claim 1, further comprising the step of, for each of the most likely words in the list, combining an acoustic score and the composite score to identify a group of most likely words to be further processed.

10 6. The method according to claim 1, wherein the group of most likely words contains less words than the list of most likely words.

15 7. The method according to claim 2, wherein the partitions are independent from the at least two language models.

20 8. The method according to claim 1, further comprising the step of representing the set of coefficients by a weight vector comprising n-weights, where n equals a number of language models in the system.

9. The method according to claim 1, wherein said combining step comprises the steps of:

for each of the most likely words in the list,

5 multiplying a coefficient corresponding to a language model by a language model score corresponding to the language model to obtain a product for each of the at least two language models; and

summing the product for each of the at least two language models.

10 10. The method according to claim 1, wherein the text data for training the plurality of sets of coefficients is different than language model text data used to train the at least two language models.

15 11. A method for combining language model scores generated by at least two language models comprised in an Automatic Speech Recognition (ASR) system, said method comprising the steps of:

20 generating a list of most likely words for a current word in a word sequence uttered by a speaker, and acoustic scores corresponding to the most likely words;

computing language model scores for each of the most likely words in the list, for each of the at least two language models;

respectively and dynamically determining a weight vector to be used to combine the language model scores of each of the most likely words in the list based on a context of the current word, the weight vector comprising n-weights, wherein n equals a number of language models in the system, and each of the n-weights depends upon history n-gram counts; and

respectively combining the language model scores of each of the most likely words in the list to obtain a composite score for each of the most likely words in the list, using the weight vector determined therefor.

12. The method according to claim 11, wherein said determining step comprises the steps of:

dividing text data for training a plurality of weight vectors into partitions, depending on words counts corresponding to each of the at least two language models; and

for each of the most likely words in the list,  
dynamically selecting the weight vector from among the  
plurality of weight vectors so as to maximize the likelihood  
of the text data with respect to the at least two language  
models.

13. The method according to claim 11, wherein the at  
least two language models comprise a first and a second  
language model, and said dividing step comprises the step of  
grouping, in a same partition, word triplets  $w_1w_2w_3$  which  
have a count for the word pair  $w_1w_2$  in the first language  
model greater than the count for the word pair  $w_1w_2$  in the  
second language model.

14. The method according to claim 12, wherein said  
selecting step comprises the step of applying the Baum Welch  
iterative algorithm to the plurality of weight vectors.

15. The method according to claim 11, further  
comprising the step of, for each of the most likely words in  
the list, combining an acoustic score and the composite

score to identify a group of most likely words to be further processed.

16. The method according to claim 12, wherein the partitions are independent from the at least two language models.

17. The method according to claim 11, wherein each of the plurality of weight vectors comprise a set of coefficients, and said combining step comprises the steps of:

for each of the most likely words in the list,

    multiplying a coefficient corresponding to a language model by a language model score corresponding to the language model to obtain a product for each of the at least two language models; and

    summing the product for each of the at least two language models.

18. The method according to claim 11, wherein the text data for training the plurality of sets of coefficients is

different than language model text data used to train the at least two language models.

19. A combining system for combining language model scores generated by at least two language models comprised in an Automatic Speech Recognition (ASR) system, the ASR system having a fast match for generating a list of most likely words for a current word in a word sequence uttered by a speaker and acoustic scores corresponding to the most likely words, said combining system comprising:

a language model score computation device adapted to compute language model scores for each of the most likely words in the list, for each of the at least two language models;

a selection device adapted to respectively and dynamically select a weight vector to be used to combine the language model scores of each of the most likely words in the list based on a context of the current word, the weight vector comprising n-weights, wherein n equals a number of language models in the system, and each of the n-weights depends upon history n-gram counts; and



a combination device adapted to respectively combine the language model scores of each of the most likely words in the list to obtain a composite score for each of the most likely words in the list, using the weight vector selected therefor.

20. The combining system according to claim 19, further comprising a dividing device adapted to divide text data for training a plurality of weight vectors into partitions, depending on words counts corresponding to each of the at least two language models.

21. The combining system according to claim 20, wherein said selection device is further adapted, for each of the most likely words in the list, to dynamically select the weight vector from among the plurality of weight vectors so as to maximize the likelihood of the text data with respect to the at least two language models.

22. The combining system according to claim 19, wherein the at least two language models comprise a first and a second language model, and said dividing device is

further adapted to group, in a same partition, word triplets  $w_1w_2w_3$  which have a count for the word pair  $w_1w_2$  in the first language model greater than the count of the word pair  $w_1w_2$  in the second language model.

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23. The combining system according to claim 20, wherein the partitions are independent from the at least two language models.

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24. The combining system according to claim 19, wherein each of the plurality of weight vectors comprise a set of coefficients, and said combining device is adapted, for each of the most likely words in the list, to multiply a coefficient corresponding to a language model by a language model score corresponding to the language model to obtain a product for each of the at least two language models, and to sum the product for each of the at least two language models.

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